

# Space News Roundup

Vol. 24 No. 3

February 15, 1985

National Aeronautics and Space Administration

## 51-E launch date set

NASA announced last week that launch of the next Space Shuttle mission, STS 51-E, is now scheduled for no earlier than March 3.

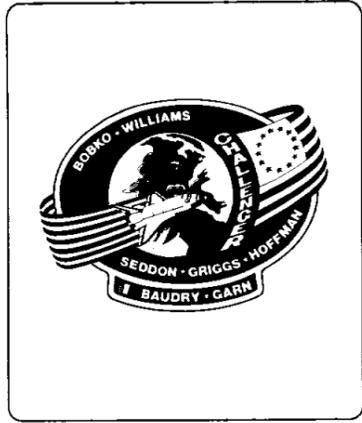
The launch time on March 3 would be 7:30 a.m. CST, with a landing on March 7 at approximately 8:32 a.m. CST at the Kennedy Space Center.

The change from the initial launch planning date of Feb. 20 has been the result of refurbishment of the thermal protection system for the Orbiter *Challenger*. The work has included the removal and reinstallation of nearly 4,000 thermal protection tiles after it was discovered late in 1984 that an underlying substance called scree had softened. Remaining work to be accomplished includes step measurements, tile gap filler installation, tile bond verification and quality assurance.

*Challenger* was moved into the Vehicle Assembly Bldg. Feb. 10 with about a dozen tile cavities remaining. At press time, officials

were targeting a rollout to Pad 39A for about 7 a.m. CST Feb. 14.

Program officials said the current planned launch date for 51-E



does not affect the plans for launching Mission 51-D—and the Orbiter *Discovery*—on March 19. Work completed in preparation for the 51-D mission includes the stacking of the solid rocket boosters

and the attachment of the external tank. If both missions go as scheduled, it would be the first time NASA has ever launched two manned space missions in the same calendar month since Gemini.

The four-day 51-E flight, which will be the seventh mission for *Challenger* and the sixteenth Shuttle flight, will deploy the second Tracking and Data Relay Satellite (TDRS) and a communications satellite—ANIK C1—for Telesat Canada. The added capability of a second TDRS will mean near continuous global communications coverage for Shuttle flights. Other payloads include the French Echo-cardiograph Experiment and the French Postural Experiment.

The seven-member crew for the flight includes Commander Karol J. Bobko, Pilot Donald E. Williams, Mission Specialists M. Rhea Seddon, S. David Griggs and Jeffrey A. Hoffman, and Payload Specialists Sen. E. J. "Jake" Garn (R-Utah) and Patrick Baudry of France.

## Station effort approved

# Ministers set ESA's agenda

Science ministers from the European Space Agency's member states approved a new agenda for the agency which includes participation in a Space Station program with the United States, subject to working out details satisfactory to Europe and the U.S.

The decision came after a two-day meeting of the ESA Council at a ministerial level, held Jan. 30 and 31 in the 17th Century Villa Madama overlooking Rome. It was the third meeting in ESA history held at the ministerial level, and the decisions made during the gathering will set the agency's agenda for the next decade at least.

The ministers approved a 70 percent budget increase for ESA over the next five years, bringing the agency's budget to about \$1.65 billion a year by 1990.

The ministers also earmarked funds for a Phase B study effort on the Columbus program, Europe's contribution to the Space Station effort. Columbus would in part be based on the technology used to construct Spacelab pressurized modules. Columbus consists of a number of hardware

elements, including pressurized modules and unmanned platforms, which the Europeans will study for applicability to the U.S. Space Station effort.

The elements under study ultimately could be docked or co-orbiting with the U.S. Station. At the same time, the Columbus study supports Europe's interest in a potential independent European space station in coming decades.

"The results of the Rome conference were very positive in making us through the Phase B effort quite firm," said NASA Administrator James M. Beggs Feb. 4.

Beggs said he looks forward to discussing Space Station plans with ESA Director General Reimar Luest when he visits the U.S. in early March.

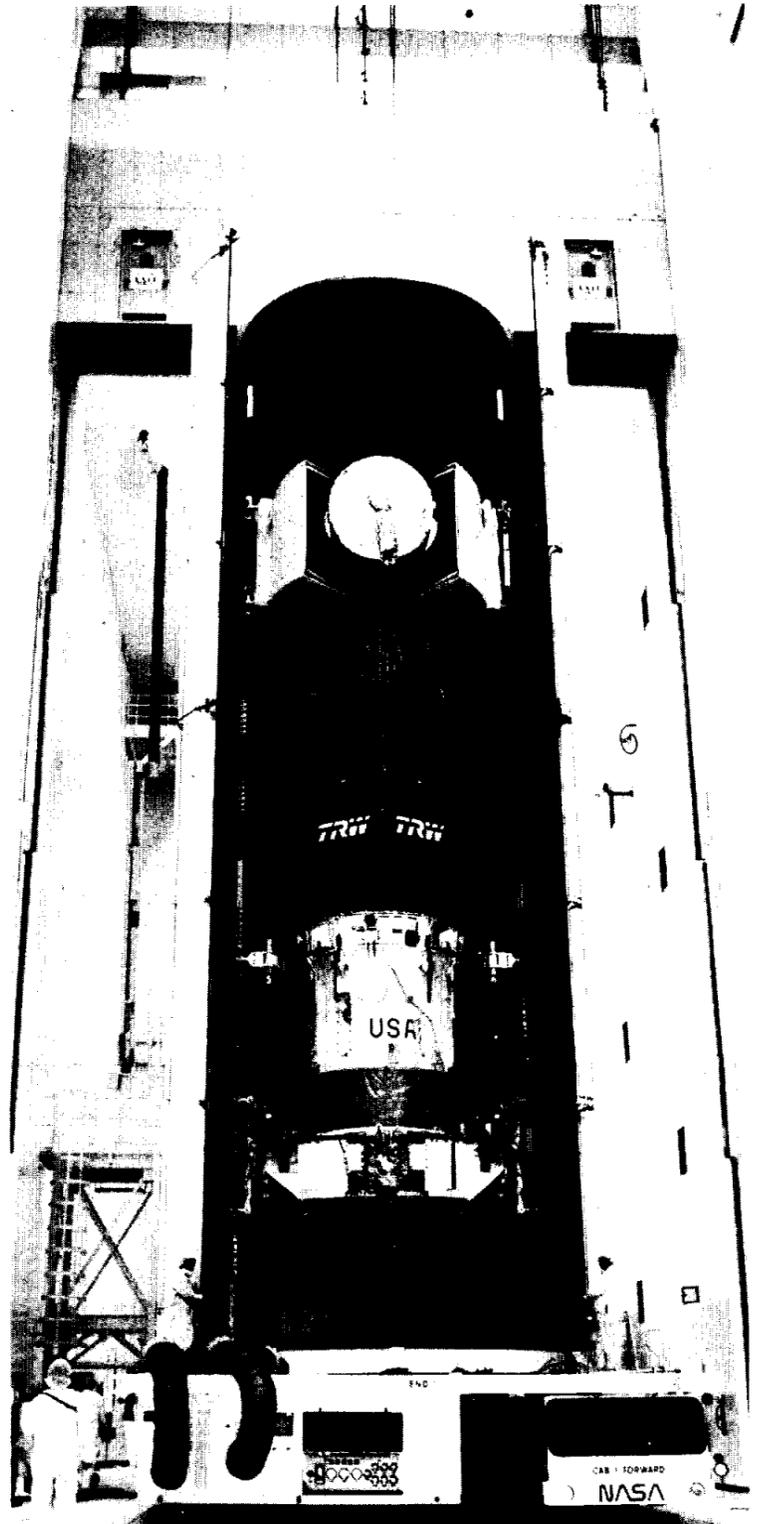
Negotiations on participating in the Space Station program began in the fall of 1984 between NASA and ESA. The two agencies hope to be able to begin parallel Phase B study efforts in April, concurrent with the awarding of Phase B Station contracts in the United States, said Margaret G. Finarelli, Chief of the International Planning and Programs Office at Head-

quarters and head of the NASA negotiating team.

The ministers also approved plans for a 10-year science program that includes a major increase in space science funding, with an emphasis on remote sensing of the Earth and Earth resources. By 1989, spending on science will increase from the present 110 Million Accounting Units (MAU) to 160 MAU. (Because of the difference in the values of the currencies used by the ESA member states, funding is calculated on a scale of millions of accounting units, or MAU. In U.S. currency, MAU's fluctuate, but currently 1,000 MAU equals a bit less than \$1 billion.)

In other action, the ministers approved development of a Large Cryogenic Engine, which would power the proposed Ariane 5, a heavy lift version of the current Ariane launcher family.

The ministers also took note of France's interest in the Hermes mini-shuttle, as well as the unmanned horizontal takeoff launch vehicle, Hotol, designed by British Aerospace Dynamics. Both vehicle designs are envisioned as being possible around the turn of the century.



Two satellites are prepared for loading into the Orbiter *Challenger* as preparations continue for STS 51-E. At the top of the payload canister is the ANIK C-1 communications satellite for Telesat Canada, shown in its cradle with sunshield doors open. Below ANIK is the second Tracking and Data Relay Satellite mounted atop its Inertial Upper Stage. Launch of the four-day mission is now scheduled for no earlier than March 3.

# FY '86 budget request is \$7.9 billion

President Reagan's proposed NASA budget for Fiscal Year 1986 reflects continued priority for the Space Shuttle and the Space Station, a rise in research and development funds, and a new initiative for an unmanned orbital maneuvering vehicle, according to NASA Administrator James M. Beggs.

At just under \$7.9 billion, the budget request is an increase of about \$375 million over the FY 1985 request. Broken down into four major categories, the budget requests \$2.9 billion for Research and Development, \$3.5 billion for Space Flight, Control and Data Communications, \$149 million for Construction of Facilities and \$1.3

billion for Research and Program Management.

Broken down by NASA installations, the budget plan calls for the expenditure of \$213,713,000 at JSC, a rise of \$1,735,000 over FY '85. The plan also authorizes a permanent civil service workforce of 3,201 at JSC, down from 3,222 last year.

Under R&D funding, \$230 million is requested for the Space Station, a rise of \$80 million over the FY 1985 request. The Space Station expenditures would be broken down into two categories: \$74 million for system definition and \$156 million for technology and management integration.

Funding for the Space Shuttle and manned space flight opera-

tions falls into several different categories. The overall authorization of \$3.5 billion for Space Flight, Control and Data Communications includes \$333.6 million for the Orbiter, \$163.9 million for launch and mission support, \$454 million for propulsion systems and \$25 million for changes and system upgrades. Flight operations, flight hardware and launch and landing operations would be allocated a total of \$1.725 billion. Space and ground networks, communications and data systems would be allocated a total of \$808.3 million.

Other funding for the Space Transportation System would include \$459.3 million for capability development in the R&D

Program. This is broken down into \$96.7 million for Spacelab, \$122 million for upper stages, \$109.7 million for the STS engineering and technical base, \$63.9 million for payload operations and support equipment, \$21 million for advanced programs, \$21 million for the Tethered Satellite System, and \$25 million for the Orbital Maneuvering Vehicle, a new start.

The OMV request, Beggs said, "would support the completion of definition studies and initial development of (a) remotely-piloted, unmanned, reusable spacecraft to be used to extend the Shuttle's on-orbit operational range and capabilities." The OMV concept foresees vehicles, remotely piloted from the

Space Shuttle, capable of low Earth orbit operations, with a 1,500 nautical mile range and a seven to eight degree orbital inclination plane change capability.

The budget also supports development of the Advanced Communications Technology Satellite, scheduled for flight in 1989, and the acceleration of the Advanced Turboprop Propulsion System, scheduled for flight testing in FY 1987. Other future programs requested under the budget include the Venus Radar Mapper, the Mars Observer, the Upper Atmospheric Research Satellite and a scatterometer sensor for the Navy Remote Ocean Sensing System, N-ROSS, scheduled for launch in mid-1989.

## Space News Briefs

### GOES-1 succumbs to age

America's oldest operational weather satellite, GOES-1, has succumbed to age, the National Oceanic and Atmospheric Administration said Feb. 4, after the last of two incandescent lamps in its optical scanner assembly failed. Launched in October 1975, the first Geostationary Operational Environmental Satellite had been on standby since 1978, but was pressed back into front-line service in August 1984 after the failure of GOES-5. Loss of the satellite should not have much impact on weather coverage, NOAA said. The Agency plans to supplement coverage with images from a polar orbiting satellite. GOES-1 will be moved out of its slot in GEO to make room for another orbiting weather station.

### Group formed to market Shuttle

Former Astronaut Eugene Cernan and former Texas Senator John Tower, the new chief negotiator for the Strategic Arms Reduction Talks, were named Jan. 30 as directors of a company seeking private operation of the Space Shuttle. Four other corporate executives were named to the board of Space Shuttle of America Corp., a subsidiary of Astrotech International Corp. The company is negotiating with NASA for private operation of the Space Transportation System, if the STS is turned over to the private sector. No decisions have been made on a timetable for any potential phasing over of STS operations from government to private industry.

## Bulletin Board

### Third NACA reunion planned

The third reunion of former employees of the National Advisory Committee for Aeronautics—NASA's predecessor agency—will be held Sept. 6 to 8, 1985, at Stouffer's Inn on the Square in Cleveland. Some 1,000 people are expected to attend the gathering, which coincides with the 70th anniversary of the founding of the NACA in 1915. Activities will include a visit to the Lewis Research Center, one of the original three NACA field laboratories, and an evening of dining and dancing to Big Band music. The weekend package will cost approximately \$300 per couple, according to reunion organizers. Interested persons are asked to write NACA Reunion Committee, NASA Lewis Research Center, 21000 Brookpark Rd., MS 60-1, Cleveland, Ohio, 44135. The previous NACA reunions were held in Ashville, North Carolina in 1976 and Williamsburg, Virginia in 1982.

### Black history program set

"The Afro-American Family: Historical Strengths for the New Century," is the theme of a forum which will be held at JSC Feb. 22 to commemorate Black History Month. The speaker, history professor and Egyptologist Dr. Yosef ben-Jochannan, will explore that topic in a program which begins at 1:30 p.m. in the Olin E. Teague Auditorium. Moderators and forum guests will include Claudette Sims, Manager of Community Services and Producer/host of "Crossroads" for KTRK-TV; Melanie Lawson, Weekend Anchor and Reporter for KTRK-TV; DeAnn Collins, a former news broadcaster for KMJQ-FM; and the Rev. Dr. Michael Patrick Williams, Pastor of the Antioch Missionary Baptist Church. Musical selections will be performed by the Bruce ARS Musica — Faculty Ensemble, and the Bruce Elementary Music Academy. The idea of recognizing the accomplishments of Black Americans was initiated in 1926 by Dr. Carter G. Woodson and is now observed nationwide each year in February.

### IRS offers tax assistance

Free tax return assistance and toll-free TTY service for deaf taxpayers are being offered this year by the Internal Revenue Service. Tax assistance sites will be operating in Houston, Galveston, Beaumont and surrounding areas from Feb. 2 through April 15, according to the IRS. The help is directed toward those who need help filing their Forms 1040 EZ, 1040A or simple 1040. In addition, the IRS will be taking questions from taxpayers using special TTY equipment for the deaf. Taxpayers who have access to TTY equipment can call the IRS toll free at 1-800-428-4732 from 7 a.m. to 5:45 p.m. CST through April 15. Information on location and hours of operation of the various tax assistance centers can be obtained by calling 965-0440 or 1-800-424-1040.

### Metro tickets available.

Tickets are now available at the JSC Bldg. 11 Exchange Store for Clear Lake bus routes and rides to downtown Houston offered by Metro. The Metro Commuter Express Ticket, at \$1.85 one way, allows the rider a one-way trip to downtown Houston from the park and ride lot on Bay Area Blvd., Monday through Friday. The Commuter Card, at \$74, allows unlimited use of the Metro bus system on the Bay Area route and all other Metro routes during a calendar month. The Commuter 40-Ride Book, at \$74, allows the holder to use all tickets over a three-month period to and from downtown. The Commuter Zone Card, at \$21, allows unlimited use of local bus routes within Clear Lake City, Taylor Lake Village and El Lago, as well as connections to Nassau Bay, JSC and Baybrook Mall, good for up to one month. Route information and schedules are available at the Exchange Store. For more information, call Linda or Joyce at x4814.

### NARFE meeting scheduled

The next meeting of the JSC Chapter of the National Association of Retired Federal Employees will be a dinner meeting beginning at 6 p.m. Tuesday, March 5, at the Harris County Park Bldg. on NASA Road One. The group meets the first Tuesday of each month at 1 p.m., and holds a dinner meeting every third month at 6 p.m. Retirees and those planning retirement are invited to attend. For more information, call 334-2494.



Some of the toys which will make a trip into space aboard Mission 51-E are pictured above prior to being packaged and sent to the Kennedy Space Center for loading last week. At the center is "Rat Stuff," a toy mouse who does backflips in a one gravity environment, but whose behavior will be the subject of interest in micro gravity. The demonstration of how familiar objects respond to a change in gravity is intended to foster an interest in physics and science among elementary school students.

## Goddard issues platform RFP

The Goddard Space Flight Center has issued a Request For Proposal, asking industry to develop a space platform to provide five years of on-orbit services to NASA payloads and still allow the developer to market to a wide variety of commercial users.

In a departure from customary practices, industry would finance, develop, own and operate the platform. This approach is considered a major "first step" toward creating a closer partnership between government and industry in space. Goddard officials described the action as a "pioneering effort that will allow many payloads from different users to share the same platform, with the first use in late 1988."

The platform effort is totally separate from NASA's plans for a government-developed permanently manned space station. The commercial entrepreneur would be free to market the platform services for materials processing or other manufacturing activities.

The RFP stipulates, however, that the platform must be capable of providing services for three of NASA's forthcoming projects—the Extreme Ultraviolet Explorer (EUVE), the X-Ray Timing Explorer (XTE) and a Zero Gravity Payload—as well as for a fourth as yet unidentified project.

The EUVE will be a free flyer after its deployment from the Space Shuttle on a mission now scheduled for December 1988. Its primary objective will be to conduct a survey

of the entire celestial sphere (full-sky) in the extreme ultraviolet. The science payload will weigh 1,600 lb.

The XTE will explore X-ray sources to help scientists learn more about the physical laws governing behavior of the X-ray sources. The XTE payload will weigh between 3,300-4,400 lb.

The Micro-Gravity Payload carrier will weigh 2,000 lb. and will be used to house micro-gravity experiments on orbit for up to six months. The contractor will be required to maintain the zero-gravity environment and to supply continuous power up to 2,000 watts.

Commercial payload sponsors would reimburse the government for use of its orbiter and facilities.

## Warren North retires

Warren North, veteran specialist in the field of astronaut selection and training at JSC retired February 1 after 38 years with the agency.

North, 62, joined NASA's predecessor agency, the National Advisory Committee for Aeronautics (NACA), in 1947 as a test pilot-engineer at the Lewis Research Center, Cleveland, Ohio, after earning a bachelor's degree

from Purdue University. He later earned master's degrees from Case Institute of Technology and Princeton University.

In 1959 North transferred to NASA Headquarters, where he took part in early planning for Project Mercury, including selection and training of the seven original Mercury astronauts. Transferring in 1962 to the Manned Spacecraft Center (now Johnson

Space Center), North headed the Center division responsible for training astronauts for Gemini rendezvous and docking development flights and for the Apollo lunar landing program.

At retirement North was special assistant to the JSC director of flight operations in planning Space Shuttle crew training and flight simulation equipment and techniques.

## NASA wins design award

NASA has won the Presidential Design Award for its graphics and visual communications system.

The government-wide awards, presented by President Reagan on Jan. 30, are administered by the National Endowment for the Arts and recognize excellence in federal design. The NASA project, along with 12 others, was selected from among 91 winners of Federal Design Achievement Awards.

The Presidential Design Awards program was established in December 1983. In his memoran-

dum to heads of departments and agencies, President Reagan said, "The federal government is the nation's single largest builder, printer and user of design services. What we build, print or cause to be manufactured for federal use directly affects every citizen. We must ensure that these investments are cost-effective, well-planned and reflect the standards of excellence which we all expect from our government."

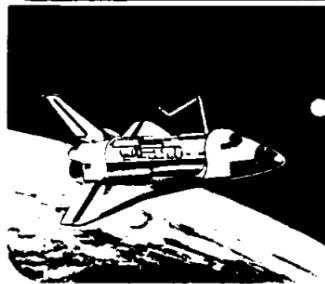
The Presidential Design Awards jury chairman, noted architect I.M. Pei, stated in his jury report, "By far the largest number of entries

were submitted under the category of graphic design, ranging from a single postage stamp to a total graphic communications program. Especially noteworthy is the visual communications system developed by the National Aeronautics and Space Administration whose posters, publications and logotype generally maintain a high standard of design which truly captures the spirit and vitality of the space program."

The NASA visual communications program is administered by Robert Schulman, Graphics Coordinator, at NASA Headquarters.

NASA  
Lyndon B. Johnson Space Center

## Space News Roundup



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## Perspective

# Eyes on Venus

## Deep Space Network aids study of Earth's sister planet

Jan. 21, 1985, marked the first time that signals from the Soviet Venera-Halley (VEGA) space probes were received at a NASA tracking station.

As part of an international tracking network organized by the French space agency, the Centre National d'Etudes Spatiales (CNES), the giant 210-foot antenna of NASA's Deep Space Network (DSN) located at Goldstone, Calif., successfully homed in on the faint signals from the two spacecraft launched from the Soviet Union in December and currently on their way to Venus.

The VEGA-1 and VEGA-2 probes were launched on Dec. 15 and 21, 1984, respectively. Both spacecraft comprise a Soviet mission to study Venus and Halley's Comet, and each will drop an instrument-laden balloon into the Venusian atmosphere in June 1985. The balloons will be tracked by two networks: the international one in addition to a Soviet internal network.

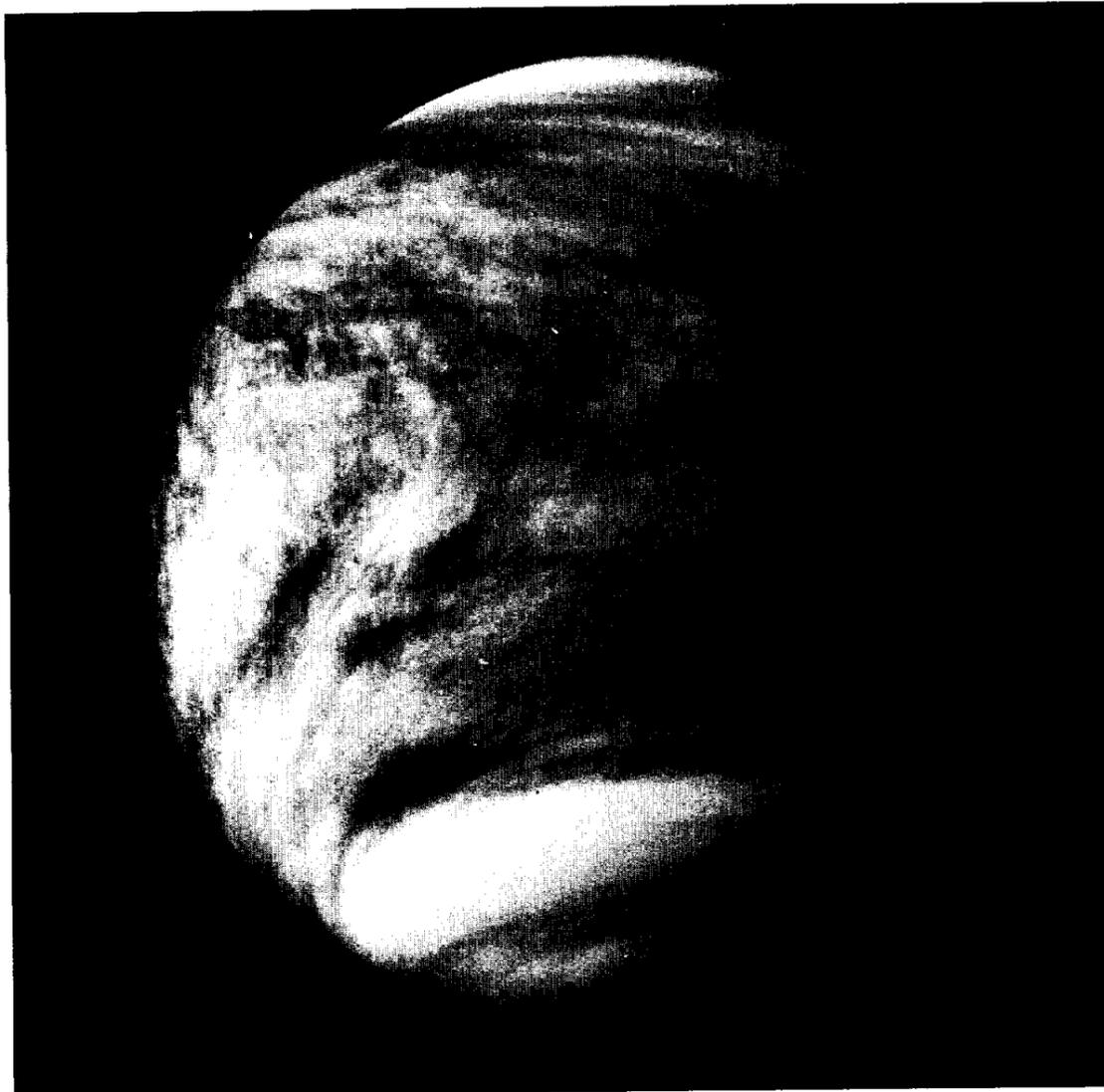
Each VEGA spacecraft will also drop a lander to the Venus surface that will study the atmospheric properties on descent. The gravitational field of Venus will then bend the VEGA trajectories so as to put the spacecraft on a precise course for their March 1986 encounters with the comet.

Once deposited in the planet's equatorial region, the two balloons will be free to float in the middle, most active layer of Venus' three-tiered cloud system. Scientists hope that data obtained from the balloons will help further the understanding of the complex Venus weather machine.

The United States is cooperating with France in this balloon experiment, which will investigate the characteristics and motions of the Venusian atmosphere.

To track the balloons' movements, and thus measure wind velocity, transmitters on the balloons will continually send signals to Earth during the two-day lifetime of each balloon. The signals will be received by three globally placed hyper-sensitive 210-ft. diameter dish antennas of NASA's DSN, which are part of an international network of radio astronomy antennas organized by CNES.

Using the signals from the combined array of at least 10 antennas worldwide, in addition to data from the Soviet network, scientists can calculate in detail the balloons' locations and motions, using a radio astronomy technique known as Very Long Baseline Interferometry (VLBI). This technique can measure balloon velocity, and hence Venus wind velocity, with a precision of approximately two miles per hour at a distance of 67 million miles from Earth.



Venus appears in gibbous phase as seen from the American Pioneer Venus probe, above, while the surface of Venus is seen below in an image from the Soviet Venera-14 spacecraft.

The DSN antennas will make a unique contribution to the international tracking network in that they will also receive data from the other scientific instruments on the balloon gondola. These include instruments to measure the frequency of lightning flashes, the vertical velocity of wind gusts, the temperature and pressure of the atmosphere, and the location and density of clouds. One of the most important scientific objectives will be to determine how these measurements vary with time and place.

Certain aspects of the atmospheric circulation of Venus are not well understood, and scientists will be studying fluctuations in atmospheric phenomena such as wind and cloud cover density in order to learn more about the circulation. Understanding turbulence and wave-type motions in the clouds is important because Venus' cloud layers are believed to be the driving gear of the planet's multilayered weather machine. For example, scientists hope that data from the balloon mission will help explain

why the atmosphere at Venus' cloud tops circles the planet at the amazing rate of once every four days, or at a speed of 250 miles per hour, as compared to near-calm at the surface of Venus.

Other atmospheric phenomena that are not fully understood include:

- how the massive, slow moving lower atmosphere transfers energy and momentum to the relatively fast moving upper atmosphere;
- how the clouds evolve chemically;
- what chemical cycles are in force, i.e., how the sulfur source for the clouds' sulfuric acid is cycled up from the surface.

The balloon mission data may provide an insight to the solutions of these and other atmospheric puzzles of Venus.

In order to gather atmospheric data during the Venus encounter, each balloon will carry its scientific instruments housed in a narrow,

segmented gondola about five feet in length. The balloons themselves will be helium-filled and will measure about 10 ft. in diameter, with the gondola suspended about 40 ft. below.

The U.S. science team has been working with French scientists of the Service d'Aeronomie of the Centre National de la Recherche Scientifique (CNRS) — the Aeronomy Service of the French National Center for Scientific Research — directed by Professor Jacques Blamont, who also was the initiator of this joint balloon project. The data from the balloons will be analyzed jointly. U.S. team member Boris Ragent of NASA's Ames Research Center, Mountain View, Calif., provided the design of one of the balloon instrument packages — the nephelometer — which measures cloud properties.

The U.S. team will play an important role in the analysis of the precision tracking data to determine the wind velocities and turbulence in the Venus atmosphere. Robert Preston and other scientists

of NASA's Jet Propulsion Laboratory (JPL), Pasadena, Calif., were heavily involved in the scientific definition of the wind experiment. The first discovery of the super-rotation of the Venus atmospheric winds was made by French amateur astronomers Boyer and Camichel in 1961, and was later confirmed by the U.S. Pioneer Venus spacecraft.

The U.S. team of scientists is led by Robert Preston of JPL, and includes a number of scientists with past experience in studying Venus in the U.S. Pioneer Venus mission. Among those who will participate in the analysis of the Venus atmospheric data are Boris Ragent, Alvin Seiff and Richard Young of Ames Research Center; Jordan Ellis, Lee Elson, Claude Hildebrand and George Purcell of JPL; and Andrew Ingersoll of the California Institute of Technology in Pasadena.

In order to track the Soviet spacecraft, the antennas of the DSN had to be converted to a new receiving frequency. Leading the complex DSN effort are Charles Stelzried, James Wilcher and James Withington of JPL. They work with Gerard Laurans of CNES' Toulouse Space Center, who is coordinating the international network.

Although much is not understood about Venus' atmosphere, scientists do know some of the significant characteristics of the environment in which the balloons will float from Pioneer Venus probe data and from earlier U.S.S.R. lander-probes. The middle cloud layer extends from 30.3 to 33.9 mi. above the surface of Venus, and the temperature in this layer varies from 162 to 55 F.

The pressure at the altitude in which the balloons will float is half an atmosphere — about a thousand times the pressure of Earth's atmosphere at the same altitude. As with all of Venus' cloud layers, the middle cloud layer is made up mostly of droplets of concentrated sulfuric acid.

The balloons' batteries will run out of power after 60 hours. However, after about two days the balloons will cross from the night side of Venus into the day side, and it is likely that they will not survive the sun's heat. They will probably become too hot, causing their internal pressure to rise, and the balloons to pop.

By studying the atmospheric dynamics on Venus and other planets in the solar system, scientists strive to gain a comprehensive understanding of atmospheric processes in general, so that all the planets, including Earth, can be understood in terms of a general set of physical laws.



# Roundup Swap Shop

All Swap Shop ads must be submitted on a JSC Form 1452. The forms may be obtained from the Forms Office. Deadline for submitting ads is 5 p.m. the first Wednesday after the date of publication. Send ads to Roundup, AP3, or deliver them to the Newsroom, Bldg. 2 Annex, Room 147. No phone in ads will be taken.

## Property & Rentals

For sale/lease: Mirimar 4-2-2, fenced yard, good condition, \$525/mo. plus deposit. Call 486-0421.

For sale/lease: 3-2-2 townhome, immediate occupancy, no pets, roommates welcome, \$600/mo. Call 333-2636 after 5 p.m.

For rent: El Dorado condo, 1 BR, FPL, W/D, security alarm, weight rm., \$320/mo. Call 1-409-744-8674 collect.

For lease: Baywind II 1 BR condo, FPL, kitchen appliances, W/D connections, pool, exercise room. Call Jim Wiltz, x5437 or 944-0451 after 5 p.m.

For sale: University Green patio home, 2-2-2, split BR design, detached garage, utility room, cathedral ceiling, FPL, microwave, pool access. Call 488-0500 or 480-6516 after 5 p.m.

For lease: Nassau Bay, 3-2-2 w/den, near JSC, available March 1, \$675/mo. plus deposit. Call M. Duke, 488-4493.

For rent: Bay Area Blvd., 1 BR condo, furnished, w/electricity. Call Dan, x6471 or 333-3925.

For lease: Tranquility Lake condo, private lake w/lighted jogging path, electronic security gates, W/D, FPL, microwave, cable TV hookup, \$370/mo. Call Laurie Webster, x4776.

For lease: 1 BR condo, W/D, FPL, covered parking, burglar alarm, tennis, new paint, half-month free rent. Call Jim Briley, x5491 or 488-7901 evenings.

For sale: Nassau Bay 4-2-2, 2,200 sq. ft., new carpet, paint, roof, fence, sundeck, 20 ft. FPL, landscaped, reduced to \$114,900. Call Jerry, x3561.

For lease: Pearland/Dixie Hollow, 3-2-2, new paint, ceiling fan, inside utility room, \$495/mo. Call 482-6609.

For sale: Egret Bay condo, 2-1-2, W/D, FPL, covered parking, lots of storage, 2 pools, boat ramp, 24 hr. security, close to NASA, excellent cond., low 40's. Call Sara, x3048 or 333-4751 evenings.

For sale: Egret Bay condo, 2-2-2, W/D, microwave, refrigerator, fans, FPL, pools, boat ramp, 24 hr. security, \$49,900. Call 333-9447 after 4:30 p.m.

For lease: Sterling Knoll/CLC, 3-2-2, FPL, fenced, wet-bar, mini-blinds, new drapes in master BR, \$525 plus deposit. Call 486-5621 after 6 p.m.

For sale: Countryside Oaks, 4-2.5-2, 2,400 sq. ft., formals, FPL, room for boat, RV, assume VA 9.5% w/no qualifying equity, \$20,000, pymts. \$861. Call 554-2318.

For sale/lease: 1 BR condo, FPL, W/D, refrig., microwave, fenced patio, burglar alarm, overlooks Sharpstown golf course. Call 997-1160 or 481-1191.

For rent: Alameda Mall area, 3-1.5-2, fenced backyard, furnished kitchen, central air/heat, deposit required. Call 486-8276.

For rent: Baywind II condo, 1 BR, gameroom, pool, exercise room, reserved parking, \$290/mo. Call 538-4766.

For rent: Galveston Gulf Front condo — treat yourself to a 2 day to 1

month vacation, completely furnished, low rates. Call Nussman, 488-7762.

For sale: Point Lookout west on Lake Livingston, beautiful wooded waterfront, 75 x 137, \$3,500 (assessed tax value \$5,800). Call 946-7587.

For lease: Lifetime vacation condo on Lake Conroe w/exchange privileges to international condos. Call Don, 280-6307 before 5 p.m.

For rent: Galveston-by-the-Sea condo, 2 BR, furnished, for rent by day (2 minimum), week or month. Call Clements Jr., 474-2622.

## Cars & Trucks

1976 VW Rabbit, 4 spd., some body damage but engine runs well, \$500. Call Kilbourn, x4545 or 482-7879.

1977 Chevy Monza, auto, PS, PB, yellow two dr., looks good, 101K miles but runs, \$550. Call Kilbourn, x4545 or 482-7879.

1984 Corvette, red/red leather, 19,500 miles, 4 spd. auto overdrive, Bose sound system, excellent cond., \$22,000 OBO. Call Bee Jay, x4366 or 486-8156 evenings.

1976 Ford Club Wagon, dual AC, CB, camping equipped, brown/beige, trailer hitch, 76K, \$3,000 firm. Call Sid Howard, X3212 or 485-8648 evenings.

1982 Escort wagon, auto, AC, PS, rear wiper, 39K miles, excellent cond., \$4,200. Call Joe, 280-7827 or 946-8825 after 5:30 p.m.

1980 Datsun 310GX, 24K miles, 35 MPG, AM/FM/cassette, AC, sunroof, excellent cond., \$4,100. Call Kathy, 667-6180.

1975 Toyota land cruiser, 4x4, 85K, w/1981 GM 350 engine, under 20K, best offer. Call Bob, 486-7687.

1984 Camaro, PB, PS, auto, AM/FM/cassette, AC, tilt steering, custom paint job, \$8,800. Call Sheyrl Critelli, 996-1635 after 5 p.m.

1978 Buick Regal, 3.8L, V-6, turbo, 83K, AC, AM/FM, cruise, \$3,000. Call 991-0905 after 6 p.m.

1977 Oldsmobile custom cruiser wagon, loaded, 56K miles, white w/woodgrain panel, good condition, \$3,000. Call Florentino, x2449.

1978 Datsun B210, 97K miles, \$1,495. Call Rita Sommer, x4031 or 649-1493 evenings.

1975 Plymouth window van, V-8, 3 spd. standard, some body damage but runs great, \$1,250/OBO. Call John Lo, x4107 or 482-8457 evenings.

1983 Buick Electra limited, 4 dr., loaded, showroom condition, 27K miles, \$10,900. Call 488-8537 after 5 p.m.

1978 Volkswagen Dasher station wagon, 4 cyl., gasoline engine, 4 spd., manual transmission, AC, 5,500 miles, \$1,500 cash. Call 482-6730 after 5 p.m.

1972 Ford Pinto, green, 2 dr., hatchback, \$550. Call Frank, x4752.

1976 Oldsmobile Delta 88, 4 dr., good tires and appearance, rides well, can be seen on site, \$1,000. Call 334-3254 evenings.

1976 Toyota Corona, good engine,

no rust, new tires, 4 speaker Jensen cassette/stereo, 4 spd., \$1,900 OBO. Call Mitch, 538-3150 after 5 p.m.

1980 Mercedes 300 SD, manganese brown metallic, bamboo int., stereo, alloy wheels, showroom cond., all records. Call 486-1989.

## Boats & Planes

Catamaran-SOL Cat 18', blue, 2 mainsails, 1 VIB, double trappeze, race rigged, wetsuit, trailer, excellent cond., \$1,500. Call Lee, 538-4483 or 480-8357.

Wellcraft 165 Fisherman, center console, 140 Mervcruiser I/O, power trim and tilt, depthfinder, galv. trailer, excellent cond., \$5,000. Call Robertson, x7219 or 488-2897.

## Cycles

1971 Harley Davidson 350 Sprint, original condition w/extra parts, plus bike: \$250 for both or best offer. Call Duane, 488-7090.

1973 Honda CL350, runs well, great for local commuting, incl. luggage rack, \$225. Call Killingsworth, x2313.

1979 GS425 Suzuki, 17K miles, 5 spd., electric starter, good condition, \$500. Call Foster, x3048.

Super Mongoose bicycle, 20", all chrome, like new, great buy for 10-14 yr. old, \$195. Call McNeely, x6437 or 482-5837.

1981 KZ650 CSR, blue, excellent cond., comes w/detachable carrier, shield, crash bars, highway pegs, \$1,250. Call Frank, x4752.

## Audiovisual & Computers

Motorola AM/FM/8-track stereo from 1981 Firebird, two 6 x 9 speakers, sounds great, \$50. Call McNeely, x6347 or 482-5837.

Apple II compatible disk drive, \$170. Call Ken, x2176 or 473-2602.

Victor 9000, MS-DOS, CP/M-86, supercalc, programmer's toolkit, Adventure, Basic, \$2,000 OBO. Call Mitch, 538-3150 after 5 p.m.

TRS-80 Mod 4 computer, 2 DD w/updated TRSDOS version 6.2, profile 3 plus, Scripsit WD, TRSDOS training course, cover, 3 games, printer cable, perfect cond., \$1,300 firm. Call Dick, 486-5880.

## Household

Three pc. sofa set, \$95; couch, \$25; work station, \$45, lamps, \$65; new single bed, \$125; chest, \$25. Call 482-6609.

Pair of padded bar stools, excellent cond., \$150. Call Dan, x6560 or x2189.

Twin box spring and frame, excellent cond., \$20; child's 9-drawer dresser, needs refinishing, all wood, \$10. Call Cindy, x7236 or 554-4133.

Two Ethan Allen 24" x 24" pine bunch tables, new, \$30/each; mahogany traditional style coffee table, \$100. Call Liz, x5371 or 333-4374.

Kenmore 19.5 cu. ft., frost-free,

upright freezer, excellent cond., \$250. Call 554-2479 after 5 p.m.

Bedroom suite, incl., bed, dresser, mirror, chest, solid wood, Spanish style, \$500. Call M. Duke, 488-4493.

Two bathroom vanities, 30" and 48" complete with tops and sinks, \$10. Call Robertson, x7219 or 488-2897.

Modern walnut bedroom set, dresser, mirror, chest, night stand, bed, excellent cond., \$300. Call Joe, 280-7827 or 946-8825 after 5 p.m.

## Wanted

Working or non-working Commodore equipment. Call Anthony, 486-0205.

Female roommate to share 3-2.5-2 in Heritage Park, no pets, non-smoker, \$175/mo. plus 1/3 utilities. Call Kay, 280-3422 before 4:30 p.m.

Ride or carpool from Seamist Apartments in Seabrook. I work the 7:30 to 4 p.m. shift. Call Rita, x3183.

Used baby crib in good condition. Call 488-2716 after 5 p.m.

Female roommate, private bath, kitchen privileges, close to NASA, non-smoker preferred, \$195/mo. plus 1/2 utilities. Call 280-9377.

Musician to play saxophone with Contraband, 18 piece dance orchestra. Call Bob, 486-7687.

Sitter for 4 month old infant in your Clear Lake area home, 5 days a week, 7:30 to 5:30, beginning first wk. of March. Call Anjali Jagtap, x2031 or 488-3810 evenings.

## Pets

Poodles, AKC, toy, two females, \$250 each. Call 482-1910 after 6 p.m.

AKC registered Chow, 11 mos. old, female, has shots, spayed, affectionate, outdoor dog but trained to stay in kitchen, \$95. Call Jerry, x3561 or Claire, 474-4310.

## Gilruth Center News

Call x3594 for more information

**Karate** — This four-week class runs from 6:30 to 8 p.m. beginning March 5. The cost is \$30 per person.

**Ballroom dancing** — This class teaches the basics of such steps as the rhumba, foxtro, the cha cha and the waltz. Beginners meet from 8:15 to 9:30 p.m.; intermediates meet from 7 to 8:15 p.m. Both sessions begin March 7. The cost is \$60 per couple.

**Country western dancing** — Beginning and advanced classes in country western dance will start March 4. Advanced dancers meet from 7:45 to 8:45 p.m.; beginners meet from 8:45 to 10:15 p.m. enrollment is limited, and the cost is \$20 per couple.

**Yoga** — Classic yoga exercises are taught in this class which begins March 5 and runs from 5:30 to 6:30 p.m. Tuesdays. The cost is \$25 per person.

**Jitterbug** — For six weeks beginning March 1, dance enthusiasts can learn how to boogie to swing, country western, honky tonk and rock music. Beginners meet from 8:30 to 10 p.m.; intermediates meet from 7 to 8:30 p.m. The cost is \$30 per person and space is limited.

**Typing** — Learn to type from 15 to 70 words per minute in this class beginning March 4. The class meets from 5:30 to 8 p.m. Mondays. The six-week course costs \$85 per person.

**Aerobics** — This exercise class meets Tuesdays, Wednesdays and Thursdays from 4:15 to 5:15 at a cost of \$30 per person. The eight week course begins Feb. 26.

**Games night** — The Rec Center is now open Friday nights for employees to play such games as cards, chess, backgammon and ping pong. Interested persons can call the Rec Center for details.

## Cookin' in the Cafeteria

### Week of February 18—22, 1985

**Monday** — Holiday — Washington's Birthday.

**Tuesday** — Split Pea Soup; Meatballs & Spaghetti, Liver & Onions, Baked Ham w/Sauce, Corned Beef Hash (Special); Buttered Cabbage, Cream Style Corn, Whipped Potatoes.

**Wednesday** — Seafood Gumbo; Cheese Enchiladas, Roast Pork w/Dressing, BBQ Link (Special); Pinto Beans, Spanish Rice, Turnip Greens.

**Thursday** — Beef & Barley Soup; Roast Beef w/Dressing, Fried Perch, Chopped Sirloin, Chicken Fried Steak (Special); Whipped Potatoes, Peas & Carrots, Buttered Squash.

**Friday** — Seafood Gumbo; Fried Shrimp, Baked Fish, Beef Stroganoff, Fried Chicken (Special); Okra & Tomatoes, Buttered Broccoli, Carrots in Cream Sauce.

### Week of February 25 — March 1, 1985

**Monday** — Cream of Potato Soup; Franks & Sauerkraut, Stuffed Pork Chop, Potato Baked Chicken, Meat Sauce & Spaghetti (Special); French Beans, Buttered Squash, Buttered Beans. Standard Daily Items: Roast Beef, Baked Ham, Fried Chicken, Fried Fish, Chopped Sirloin. Selection of Salads, Sandwiches and Pies.

**Tuesday** — Navy Bean Soup; Beef Stew, Liver & Onions, Shrimp Creole, Smothered Steak w/Dressing (Special); Corn, Rice, Cabbage, Peas.

**Wednesday** — Seafood Gumbo; Roast Beef, Baked Perch, Chicken Pan Pie, Salmon Croquette (Special); Mustard Greens, Italian Green Beans, Sliced Beets.

**Thursday** — Beef & Barley Soup; Beef Tacos, Diced Ham w/Lima Beans, Stuffed Cabbage (Special); Ranch Style Beans, Brussels Sprouts, Cream Style Corn.

**Friday** — Seafood Gumbo; Fried Shrimp, Deviled Crabs, Ham Steak, Salisbury Steak (Special); Buttered Carrots, Green Beans, June Peas.

## The Form debuts

Beginning with the Feb. 15th issue of the *Space News Roundup*, all ads submitted to the Roundup Swap Shop must make use of a JSC Form 1452, a copy of which is reprinted here. The form is being introduced in an effort to make Swap Shop advertising somewhat easier, not only for advertisers, but for the staff of the Media Services Branch, Public Affairs Office, as well. The branch receives anywhere from 50 to 100 calls a week from people asking for instructions on how to place a Swap Shop ad, even though the procedures have been the same for nearly 20 years. The excessive telephone traffic and the apparent confusion may best be remedied, we hope, by one form which lists all procedures for placing ads, and which also gives instructions on how to estimate deadlines for submissions. You must use this form to submit an ad, otherwise it will not appear in the paper.

The form is available from the Forms Office, Distribution Operations, at Mail Code JM86. You don't need to call the folks in Forms. In fact, please do not call the folks in Forms. Instead, ask your secretary to order this form by filling out a standard requisition on a JSC 614, and sending it to Forms at Mail Code JM86. In a matter of days your branch will be provided with the Swap Shop submission forms. That's all it takes, and we greatly appreciate your cooperation.



### Roundup Swap Shop Submission

**Important:** All advertisements accepted for free publication in the Space News Roundup **MUST** meet the rules and procedures as follows:

1. Keep the ad brief and to the point, around 25 words or less (Length is not as important as clarity).
2. Two separate ads, maximum, per person, per issue are allowed. You may place several items within one ad, just keep the descriptions short. If you send more than two ads, only the top two will be printed. **The remainder will be discarded.**
3. Ads are not automatically repeated. If you want an ad to run in three successive issues, you must send it in and meet the deadlines for three successive issues. Do not send three copies of one ad and expect them to be carried over.
4. No phone-in ads are accepted.
5. No commercial ads are accepted.
6. Ads are accepted from NASA civil service employees, retired civil service employees and from on-site contractors. All on-site employees must use **JSC Form 1452** to submit ads. Retirees may submit ads by mail as before, using 8 1/2 x 11 paper.
7. Send ads to Roundup Swap Shop, Code AP3, or deliver them to the Bldg. 2 annex, Room 147.
8. All advertisements must include full name, work phone, mail code and home phone number. Specify which phone number you want in the advertisement.
9. Roundup deadline is always close of business the first Wednesday following the date of publication (not the day you receive the paper).

Submitted By: (Name, print or type) \_\_\_\_\_ Signature \_\_\_\_\_

Office Phone Number	Home Phone Number	Employer	Mail Code

Ad #1 (Include only personal information you wish to have published.)

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Ad #2 (Include only personal information you wish to have published.)

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